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Project for a Europe-Africa permanent link through the Strait of Gibraltar

Note by the Secretary-General

1. The Secretary-General has the honour to transmit to the Economic and Social Council the report prepared in accordance with Council resolution 1999/37 by the executive secretaries of the Economic Commission for Europe and the Economic Commission for Africa on the work that has been done in connection with the project to establish a Europe-Africa permanent link through the Strait of Gibraltar (see annex).

2. The Economic and Social Council has taken an interest in this project since 1982 following a decision by the Governments of Morocco and Spain to carry out joint studies on the feasibility of the project as part of an agreement on bilateral cooperation adopted on 24 October 1980. Since then the Council has regularly requested the two regional commissions to keep track of the progress of studies relating to the project and to inform the Council of any developments.

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Annex

Project for a Europe-Africa permanent link through the Strait of Gibraltar: report on studies and activities carried out through the period 1999-2000

Summary

This report, drawn up jointly by the Economic Commission for Europe and the Economic Commission for Africa pursuant to Economic and Social Council resolution 2001/29 of 26 July 2001, describes inter alia the work carried out in 2001-2002 by the two research companies, the Sociedad de Estudios para la Comunicación Fija a través del Estrecho de Gibraltar (SECEG), and the Société Nationale d'Études du Détroit (SNED), in connection with the project for a Europe-Africa permanent link through the Strait of Gibraltar. The work took place in the following areas: topographic mapping and related activities; geological mapping; oceanography; geotechnical tests; and traffic monitoring. Offshore drilling surveys may resume in the near future, after which an exploratory gallery may be dug so that remaining doubts as to the technical feasibility of a drilled rail tunnel can be clarified.

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Introduction

1. In its resolution 2001/29 of 26 July 2001, the Economic and Social Council requested the Executive Secretaries of the Economic Commission for Africa and the Economic Commission for Europe to continue to take an active part in the follow-up to the project and to report to the Council at its substantive session of 2003. This report, drawn up jointly by the two regional commissions, is in response to that request and gives a brief overview of the work done during 2001-2002.

2. It should be recalled that studies for this project have been carried out pursuant to the bilateral agreements of 24 October 1980 and 27 September 1989 between the Governments of Morocco and Spain, under which the two parties undertook to conduct a joint study, on the basis of an equal sharing of the cost, of the feasibility of the project for a permanent link through the Strait of Gibraltar. The studies are conducted by two State companies: one is Spanish, the Sociedad de Estudios para la Comunicación Fija a través del Estrecho de Gibraltar (SECEG), and the other Moroccan, the Société Nationale d'Études du Détroit (SNED), under the direction of an intergovernmental Joint Committee.

3. It is also recalled that the studies are being conducted in different phases. Following the pre-feasibility studies, completed in 1990, the project is currently at the feasibility phase, the purpose of which is to determine the viability of the project. This phase has so far comprised three stages, F1, F2 and F3, the third of which is currently in progress.

4. The F1 stage, completed in 1996, led to the selection of a basic option for implementation of the permanent link project and the making of preliminary plans on the technical and financial levels. This basic option essentially comprised a rail tunnel bored beneath the sill of the Strait, consisting of three tubes, two of which were for traffic and the third a service and safety tunnel. The tubes would have a total length of 40 kilometres of which 28 would be under the sea, with a maximum water depth of 300 metres.

5. Stage F2, completed in 1997, included a deep drilling survey named *Bucentaur 97*, which marked one of the most significant stages in the survey process. It not only confirmed the exceptional technical difficulties for deep drilling work owing to the pattern of currents in the Strait, but also revealed the unexpected presence of adverse geological formations affecting the basic layout of the project. The problems arising out of these results led to the closure of the F2 stage and the beginning of a new stage which was better adapted to the difficulties encountered.

6. The F3 stage, entitled "Investigation", in progress since 1998, has involved several additional offshore drilling surveys. Up to late 2000, the main contributions of this stage were: (a) the deep-sea drilling survey known as *Norskald 98/99*, carried out at depths which were double the previous maximum; (b) the confirmation by an independent study of the appropriateness of the technical approach used for deep drilling, i.e. the use of geotechnical drilling vessels with dynamic positioning; and (c) the preparation in late 2000 by the two research companies, on the basis of earlier results, of an updated work plan extending over a three-year period and aiming at the completion of the F3 stage and the reassessment of the project in light of the results obtained.

I. Project activities during 2001-2002

7. The work plan produced in late 2000 was not formally approved by the intergovernmental Joint Committee because the latter did not meet during the period in question. This entailed the postponement of the main activities which had been planned, particularly the additional offshore drilling surveys, which represented a major technical objective of the plan and over 80 per cent of its overall cost. However, a number of activities provided for in the plan have been carried out, particularly under the headings of "Physical environment" and "Socio-economic aspects". Specifically, those activities involved: (a) the production of local topographical charts to make possible the definition of onshore structures in the detailed pilot project; (b) updated geological mapping; (c) continued oceanographic surveys; (d) the maintenance of geotechnical exploration structures on the two shores; and (e) the maintenance of the traffic monitoring established since the F2 stage.

A. Topographic mapping and related activities

8. On the south shore, SNED has since mid-2001 had access to detailed topographic mapping (on a scale of 1:2,000) for the land areas of the layout and the terminal, as well as additional mapping (on a scale of 1:5,000) covering the coastal zone east of Tangiers. Also, in order to identify all private and institutional partners in the reservation of sites where the terminal and the access shaft will be constructed, a land survey was conducted, leading to the demarcation of about 130 hectares. This survey also involved analysis of future rail links between the terminal and the line to Tangiers, as well as the reservation of land relating to it. Also, in relation to the preparation of a joint Moroccan and Spanish series of Global Positioning System (GPS) observations conducted on both shores, the geodesic network was restored on the south shore and it was surveyed using GPS measurements.

9. On the northern shore, a new mapping survey (scale: 1:5,000) was carried out in 2002, covering the area of the onshore project layout, including the terminal and the planned road and rail connections, allowing for realistic margins for readjustment in the detailed pilot project. The coverage extends over 2,500 hectares.

B. Geological mapping

10. On the south shore, in order to update the geological mapping at the 1:100,000 scale, SNED collected bibliographical information and consolidated several reports on the subject. A team of academic geologists was set up to conduct additional land surveys. The resulting combined map will focus mainly on structural and tectonic information and will involve digital mapping techniques.

11. On the north shore, a start has been made on updating the geological map produced by SECEG between 1985 and 1990, at both the project level and the subregional (north shore) level. This involves two separate operations carried out by the SEDEC geological team, supported by two academic teams focusing on the tectonic review. The geological update in the project zone, conducted in cooperation with the University of Seville, will therefore produce a new map to be published in

the near future, covering 200 square kilometres and to a scale of 1:100,000. The current subregional geological update, conducted in cooperation with the University of Granada, will also produce a new map (2,200 square kilometres; scale 1:100,000).

C. Oceanography

12. On the Moroccan side, SNED has obtained sets of oceanographic records containing data on tides, waves and currents, from entities responsible for other major projects in northern Morocco such as the construction of sanitation infrastructure and new port infrastructure. These measurements make possible improved calibration of hydrodynamic models of water circulation in the Strait.

13. On the Spanish side, the studies of marine currents conducted by SECEG, in cooperation with the University of Cadiz, have brought about improvements in the current forecasting models used in the latest drilling surveys, through the introduction of new basic data and improvements in methods of analysis.

D. Geotechnical tests

14. On the south shore, upon the closing of the experimental structure at Malabata, SNED conducted an additional series of geotechnical tests, in order to verify certain characteristics of rocks which had been encountered at the Malabata site. This verification was conducted in coordination with SECEG.

15. On the north shore, annual convergence surveys have been conducted throughout the length of the Tarifa gallery (560 metres). There has also been considerable conservation work following the 2001 increase in the rate of deterioration of certain facings exposed since the gallery was constructed in 1995.

E. Traffic monitoring

16. Apart from the maintenance of the socio-economic and traffic database, including the publication of the related yearbooks, activities in this area have focused on direct observation of traffic between Europe and Morocco through the conduct of origin/destination (O/D) surveys. Observations of air traffic were carried out by SNED; those of maritime traffic by SECEG.

17. For a full year, from July 2001 to July 2002, SNED conducted a series of O/D surveys of air traffic, relating to passengers leaving from or arriving at Moroccan international airports and travelling to and from the Western European countries. For each airport, for one full week per month, surveys were conducted on all flights to or from Europe. About 30,000 surveys were conducted, which led to the establishment of O/D matrices, both general and by passenger profile. In terms of geographical scope and number of interviews, this series of surveys was the largest ever conducted in Morocco.

18. SECEG has continued with its long-term system of O/D surveys of maritime passenger and vehicle traffic between the ports of the Strait. Begun in 1997, this system has involved five annual series of surveys comprising 73,000 interviews,

involving a total of 140,000 passengers. Of that number, about 25,000 interviews, representing 40,000 passengers, were conducted during the reference period. From the resulting primary database, annual figures and variations in O/D matrices can be inferred, as can figures relating to many characteristics of maritime traffic across the Strait.

II. Other project activities during 2001-2002

19. During the period covered by this report, the Governments of Morocco and Spain took part in the work of the European Commission within the framework of the Euro-Mediterranean Partnership, which was launched at the Euro-Mediterranean Conference held at Barcelona in 1995. In this context, SNED has joined the working groups on research and development and infrastructure network which have arisen out of the Euro-Mediterranean Forum on Transport. SNED also participates in a research and development consortium involving the seven countries of the Western Mediterranean Transport Group (GTMO), established for the purpose of conducting the study entitled DESTIN (Defining and Evaluating a Strategic Transport Infrastructure Network in the Western Mediterranean), which involves analysing the current transport situation, elaborating growth scenarios and identifying priority projects for the development of an integrated network. This study, which began in late 2002, is expected to last two and a half years and will involve consideration of future prospects in relation to the land-based connection represented by the permanent link through the Strait.

III. Future work

20. The information gathered so far seems to indicate that the temporarily postponed studies and activities should be formally restarted in the coming months, despite the fact that at the time of preparation of this report, no date has yet been set for the next meeting of the intergovernmental Joint Committee. In particular, a resumption of offshore deep drilling activities can be expected, and this will clarify the circumstances that the project will have to deal with. The deep drilling, together with the possible construction of the submarine exploration tunnel, should make it possible to clear up remaining doubts as to the technical feasibility of a bored rail tunnel. Cooperation on the project between the two instigating countries and the governmental and non-governmental organizations involved is vital if the project is to succeed.

IV. Conclusions

21. **Determining the technical feasibility of a drilled rail tunnel under the Strait of Gibraltar requires the resumption of offshore deep drilling and, if necessary, the digging of an exploratory gallery. The completion of these tasks requires the cooperation of the Governments and entities concerned.**